Crosslee Community
Primary School.

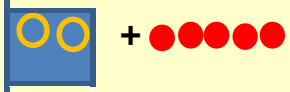
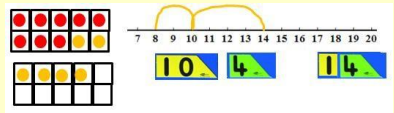
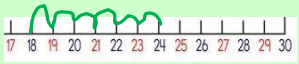
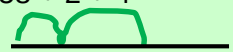
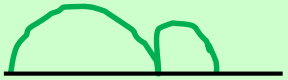
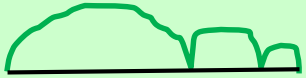
Calculation Policy

Crosslee Community Primary School

Calculation Policy

Addition

Addition

EYFS to Year 1 **Nursery** Solve real world mathematical problems with numbers up to **Reception** Explore the composition of numbers to 10. **Year 1** Add and subtract one digit and two digit numbers to 20, including zero	2 + 5 = Count out each set then find the total	**2 + 5 =**  Count on from first number. Cover first number or display as	**2 + 5** Leading to 5 + 5 + 2 (without counters) Recognise the biggest number in the calculation and count on from it (using objects for smaller number if necessary)	2 + 5 5 + 8 4 + 13 11 + 7 Recognise the biggest number in the calculation and count on from it mentally or using number line	6 + 8 becomes 8 + 2 + 4  Partitioning the smaller number and use the tens number to bridge calculation 5 + 17 becomes 17 + 3 + 2
Year 2 **Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:** **a two-digit number and ones** **a two-digit number and tens** **two two-digit numbers** **adding three one-digit numbers**	**6 + 18** By counting on from the largest number  **30 + 46** By counting on in tens 46 56 66 76	**6 + 58** By partitioning the smaller number through the multiple of 10 58 + 2 + 4  58 60 64 **22 + 50** By counting in groups of ten and one from  largest number 50 70 72	TO + TO within 100 **37 + 44**  44 74 80 81 or 40 + 30 = 70 7 + 4 = 11 70 + 11 = 81 Or 44 + 40 – 3 = 81 **Recall of facts to 20 and by recall of adding multiples of 10 will support this thinking**	Addition of three single digits – look for bonds you know and doubles **6 + 9 + 3** 6 + 3 =9 Double 9 = 18 When they're ready, addition of two digit + 2 digit numbers formally 7 6 6 9 1 1 4 5	**Special cases + 9** **9 + 33** 33 42 43 **Using Doubles** **29 + 30** is the same as **30** + 30 – 1

Addition

Year 3 Add and subtract numbers mentally, including: ▪ a three-digit number and ones ▪ a three-digit number and tens ▪ a three-digit number and Two 2-digit numbers across 100 Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	**Partitioning** the numbers for TO + TO across 100 **55 + 78** 70 + 50 = 120 8 + 5 = 13 120 + 13 = 133 **55 + 78** 78 + 50 = 128 128 + 2 + 3 = 133 Recall of facts to 20 and by adding multiples of 10 will support this thinking	**Special cases** **66 + 79** 80 +66 – 1 = 145 **Using doubles** **76 + 78** Double 70 + double 6 + 2 Double 70 + double 8 – 2 Recall of facts to 20 and by adding multiples of 10 will support this thinking	**Partitioning** Adding ones and tens to a 3 digit number **356 + 8** 356 + 4 + 4 = 364 **356 + 70** 350 + 70 + 6 = 426 **356 + 600** 300 + 600 + 56 = 956	**Addition of three digit + 2 digit numbers and 3-digit + 3 digit** 5 76 69 1 1 6 4 5 4 7 9 4 6 6 1 1 9 4 5	Addition of numbers with decimal places **1.5 + 1.5** Double 1 and double 0.5 **1.6 + 1.7** 1.7 + 0.3 + 1.3 = 3.3
Year 4 Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	**Using mental strategy where appropriate** **1460 + 499** 1460 + 500 – 1 = 1959 **2560 + 3570** 6000 + 130 = 6130	**Addition of three digit + three digit and four digit + four digit** 5 7 6 3 6 9 1 1 9 4 5 7 2 6 8 5 1 7 9 1 1 1 1 2 4 4 7	**Addition of numbers to 2 decimal places** 4. 4 5 3. 5 5 1 1 8. 0 0 5 7. 8 9 4 6. 6 7 1 1 1 1 1 0 4. 5 6		

Addition

Year 5 Add and subtract numbers mentally with increasingly large numbers eg 5-digit – 4-digit multiple of 10 Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	**Using mental calculation by counting on** **45678 + 3500 = 49178** 45678 + 3000 = 48678 48678 +500 = 49178 **5.78 + 2.45** = **8.23** 5.78 + 2 = 7.78 7.78 + 0.4 = 8.18 8.18 + 0.05 = 8.23	**Column addition** 5 8 7 6 5 $^{2}_{1}$ $^{9}_{1}$ $^{6}_{1}$ $^{4}_{1}$ 8 + 8 8 4 1 3	**Mixed decimals** **57 .89 + 46.6 + 23.785** 2 3. 7 8 5 5 7. 8 9 4 6. 6 1 1 2 1 1 2 8. 2 7 5		
Year 6 Perform mental calculations, including with mixed operations and large numbers	**Partitioning** **4.578** **+ 0.008 = 4.586** **6.568 + 0.079 = 6.647** **6.568 + 0.07 = 6.638** **6.638 + 0.009 = 6.647**	**Column addition with 5 or 6 digits** 5 8 7 6 5 $^{2}_{1}$ $^{9}_{1}$ $^{6}_{1}$ $^{4}_{1}$ 8 + 8 8 4 1 3	**Using all 4 operations** **6 + 7 × 8 = 62** because multiplication first then addition when there are no brackets **2780 – 910 + 1220** can be reordered to 2780 + 1220 – 910= 3090 as long as the symbol moves with the number		

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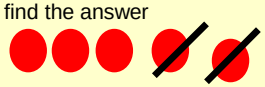
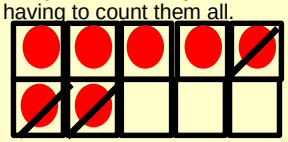
Subtraction

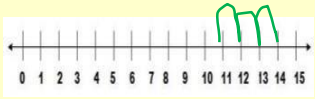
Subtraction

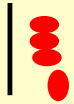
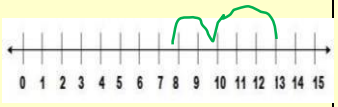
<table>
<tr>
<td>EYFS to Year 1

Nursery
Solve real world mathematical problems with numbers up to
Reception
Explore the composition of numbers to 10.
Year 1
Add and subtract one digit and two digit numbers to 20, including zero .</td>
<td>5 – 2

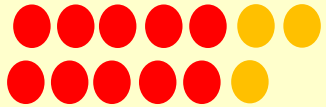
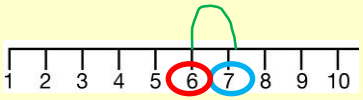
Count out 5 and remove 2 to find the answer
 
7 – 3
Using a 10 frame to subtract - The children may subitise how many are remaining without having to count them all.
  </td>
<td>7 – 2

Count back on the number line by saying start on 7, count back 1,2, what number are you on?
 </td>
<td>
8 – 2

14 – 3
 

Count backwards mentally or using a number line.</td>
<td>15 – 5
Use tens and ones when the calculation doesn’t bridge 10
 
13 – 5
 
becomes 13 – 3 – 2

Partitioning the number being subtracted through the multiple of 10 mentally or using a number line</td>
<td>Difference

7 – 6 or find the difference between 7 and 6
 
  </td>
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<tr>
<td>Year 2

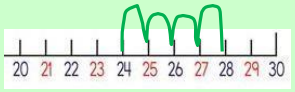
Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:

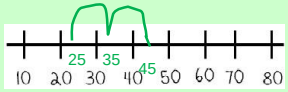
a two-digit number and ones

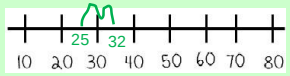
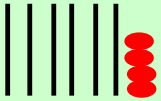
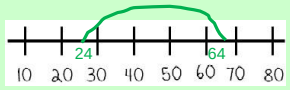
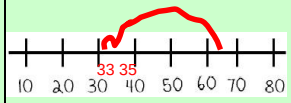
a two-digit number and tens

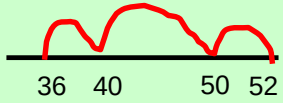
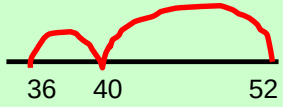
two two-digit numbers

adding three one-digit numbers</td>
<td>Subtracting by counting backwards in tens or ones

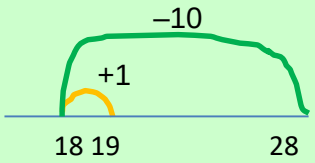
28 – 4
 

45 – 20
Use tens and ones when the
 
calculation doesn’t bridge 10

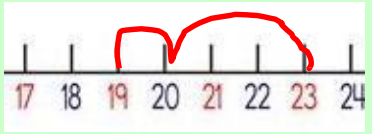
Partitioning
28 – 8 = 20
76 – 70 = 6</td>
<td>Subtracting in groups of ten(rather than counting in tens) or groups of ones (by partitioning number being subtracted through multiple of 10)32 – 7
32 – 2 – 5
 
64 – 40
Use a number line or manipulatives
 
  </td>
<td>65 – 32
 

52 – 16
This calculation bridges through 10 so we need to partition the 16 into 2/4/10 or 12/4 and subtract
 
  </td>
<td>Special cases

When subtracting 9 or 19

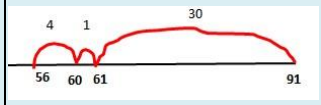
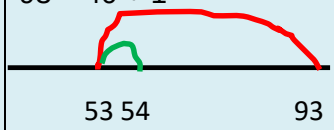
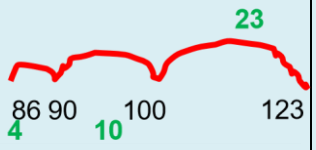
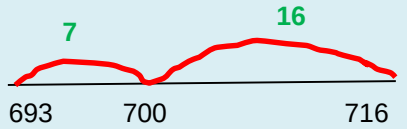
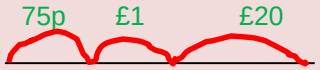
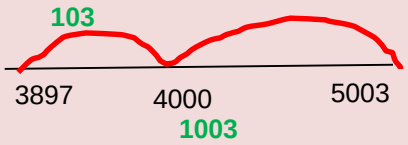
28 – 9
 

Or 28 – 10 + 1</td>
<td>Difference

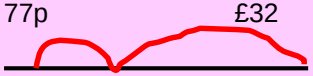
23 – 19
 

When numbers are close together, count on from the smallest number through the multiple of ten or count back from the largest to the smallest through the multiple of ten.</td>
</tr>
</table>

Subtraction

Year 3 Add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds two 2-digit numbers across 100 + and - numbers with up to three digits, using formal written methods of columnar addition and subtraction	**Partitioning** Subtracting ones and tens from a 3digit number 567 – 60 = 507 745 – 700 = 45 832 – 2 = 830 **364 – 8** 364 – 4 – 4 = 356 **356 – 70** 356 – 50 – 20 = 286 **956 – 600** 956 – 600 = 356	**TO – TO** **By counting back in tens and ones** **91 – 35** **91 – 30 – 1 – 4**  **Special cases** 93 – 39 as 93 – 40 + 1  	**Subtraction up to three digits** **123 – 86 = 37**  **£5.67 – £2.20** £5.67 – £2.00 = £3.67 £3.67 – 20p = £3.47	**Expanded column subtraction** **347 – 165 = 182** 200 140 7 300 40 7 100 60 5 100 80 2 **Column subtraction** $^{2}3\ ^{1}8\ 7\ ^{5}6\ ^{1}5$ 1 9 2 4 8 1 9 5 1 7	**Difference** (see also subtraction up to three digits) **103 – 87 = 16** When numbers are close together, count on from the smallest number through the multiple of ten or count back from the largest to the smallest through the multiple of ten. **716 – 693= 23** 
Year 4 Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	**Partitioning** 1678 – 600 = 1078 2689 – 80 = 2609 6839 – 9 = 6830 7484 – 1100 = 6384	**Using mental calculation when appropriate by counting back** **5678 – 2342 =** 5678 – 2000 = 3678 3678 – 300 = 3378 3378 – 40 = 3338 3338 – 2 = 3336	**Subtraction up to four digits** **£50 – £28.25 = £21.75**  	**Expanded column subtraction** With three digit numbers asY3 and 4-digit numbers **3326 – 2678 = 658** 2000 1200 120 16 3000 300 20 6 2000 600 70 8 600 50 8 Moving to compact decomposition as Year 5 for more able	**Difference** 5003 – 3897= **1106** 

Subtraction

Year 5 Add and subtract numbers mentally with increasingly large numbers eg 5-digit – 4-digit multiple of 10 Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	**Partitioning** 6.76 – 0.06 = 6.7 7.47 – 0.4 = 7.07	**Using mental calculation by counting back** **45678 – 3500 = 42178** 45678 – 3000 = 42678 42678 – 500 = 42178 **5.78 – 2.45** =3.33 5.78 – 0.05 = 5.73 5.73 – 0.4 = 5.33 5.33 – 2 = 3.33	**Difference** **Use bonds to 100 to support** **£10 – £7.71 = £2.29** Use a number line or jottings **£7.71 £8.00 = 29p** **£8.00 £10.00 = £2** **7 – 2.45 = 4.55** **2.45 3 = 0.55** **3 7 = 4**	**Column subtraction** $^{2}3\ ^{1}8\ 7\ ^{5}6\ ^{1}5$ $1\ 9\ 2\ 4\ 8$ $1\ 9\ 5\ 1\ 7$	
Year 6 Perform mental calculations, including with mixed operations and large numbers	**Partitioning** **4.578 – 0.008 = 4.57** **6.378 – 0.07 = 6.308**	**Difference using larger numbers and number facts** **£100 – 67.23= £32.77** 77p £32  £67.23 £68 £100	**Difference (use mixed decimals)** **6.45 – 1.7 = 4.75** **1.7 2 = 0.3** **2 6.45 = 4.45**	**As above with 5 or 6 digits**	

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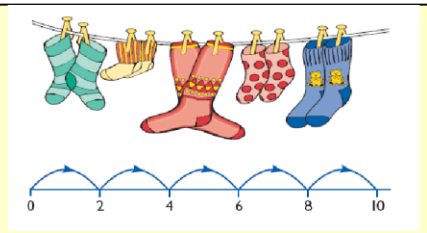
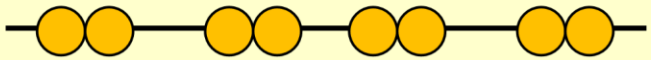
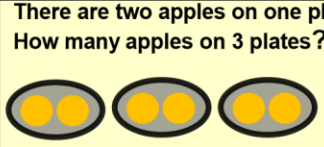
Calculation Policy

Multiplication

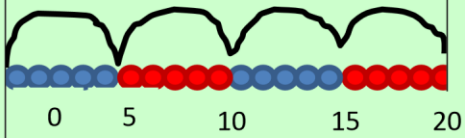
Multiplication

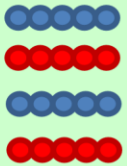
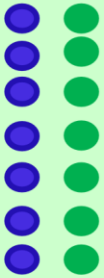
<table>
<tr>
<td>Year 1

Solve 1 step problems involving x and ÷ using objects, pictures and arrays with teacher support</td>
<td>Count in multiples of twos, fives and tens</td>
<td colspan="2"> 

 </td>
<td>There are two apples on one plate.
How many apples on 3 plates?
 
</td>
</tr>
<tr>
<td>Year 2

Calculate maths statements for x and ÷ within the times tables and write them using the correct sign

X ÷ =</td>
<td>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</td>
<td> 


5 × 4 = 20</td>
<td> 

Recall and Derive doubles

7 + 7 = 14

7 × 2 = 14</td>
<td>Recall and derive doubles

25 × 2
20 × 2 5 × 2
40 + 10 = 50

25
40 10
50</td>
</tr>
</table>

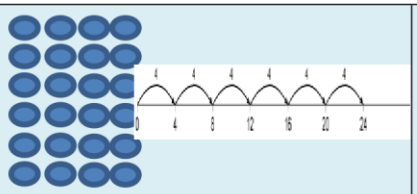
Multiplication

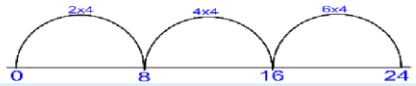
Year 3

Write and calculate maths statements for x and ÷ using times tables they know including 2-digit x 1 digit using metal and moving to written methods

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Multiply single digits by 20,30,40,50 and 80





4 × 6 = 24

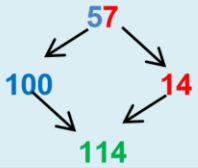
Use arrays and number lines to count in multiples

Using partitioning to multiply

57 × 2 = 114

50 × 2 7 × 2

100 + 14 =114



Scaling

Making a 5cm line 4 times longer

5cm × 4 = 20cm

48 × 3 = 144

(Partitioning)

×	40	8
3	120	24

4 × 10 × 3 or 4 × 3 × 10

120 + 24 = 144

Year 4

Use place value, known and derived facts to x and ÷ mentally inc; x by 0 and 1; ÷ by 1; x 3 numbers

X and ÷ 2 and 3 digit numbers by a 1-digit number using formal written layout

Recall multiplication and division facts for multiplication tables up to 12 × 12 (facts for 6,7,9,11,12 are new)

Multiply single digits by 60,70, and 90

Mental

Multiplying by 10 and 100

Eg. 24 × 100

Th	H	T	O
		2	4
2	4	0	0

Partitioning

267 × 2

200 × 2 = 400

60 × 2 = 120

7 × 2 = 14

400 + 120 + 14 = 534

67 × 9

×	60	7
9	540	63

540 + 63 = 603

437 × 6

×	400	30	7
6	2400	180	42

2400 + 180 + 42 = 2622

Partitioning grid multiplication leading to formal compact methods

67 × 9 =

```
  6 7
6 9
-----
6 0 3
```

Multiplication

<table>
<tr>
<td>Year 5

Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers</td>
<td>Multiply and divide numbers mentally drawing upon known facts

multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</td>
<td>Mental calculation

Partitioning
407 × 4
400 × 4 = 1600
0 × 4 = 0
7 × 4 = 28

1600 + 28 = 1628

Rounding and adjusting

£3.99 × 6
£4 × 6 = £24
£24.00 – £0.06 = £23.94

28 × 19
28 × 10 × 2 = 560
560 – 28 = 532</td>
<td>TO × TO by partitioning

47 × 58
<table><tr><td></td><td>40</td><td>7</td></tr><tr><td>50</td><td>2000
(4 x 10 x 5 x 10)
Or 4 x 5 x 100</td><td>350
(5 x 10 x 7)</td></tr><tr><td>8</td><td>320
(8 x 4 x 10)</td><td>56</td></tr></table></td>
<td>Leading to multiplication using a compact method

3 7 8 ×
5 5 7
2 6 4 6

4 5 6 9 ×
4 5 7 8
3 6 5 5 2</td>
<td>Compact for TO × TO

28 x 39 =

2 8 x
2 3 9
2 5 2
8 4 0
1 0 9 2

567 x 86

5 6 7
4 8 4 6
3 5
3 4 0 2
4 5 3 6 0
4 8 7 6 2</td>
</tr>
<tr>
<td>Year 6

Multiply multi digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</td>
<td>Perform mental calculations, including with mixed operations and large numbers</td>
<td>Mental calculation

Partitioning
5.7 × 6
5 × 6 = 30
0.7 × 6 = 4.2
30 + 4.2 = 34.2

5.3 × 19
5.3 × 10 × 2 = 106
106 – 5.3 = 100.7</td>
<td>3749 × 38

3 7 4 9 ×
3 7 8
2 9 9 9 2
1 1 2 4 7 0
1 4 2 4 6 2</td>
<td></td>
<td></td>
</tr>
</table>

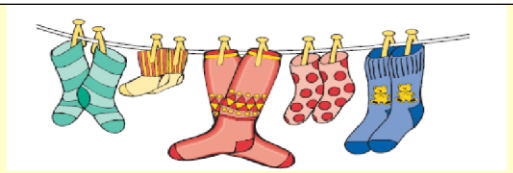
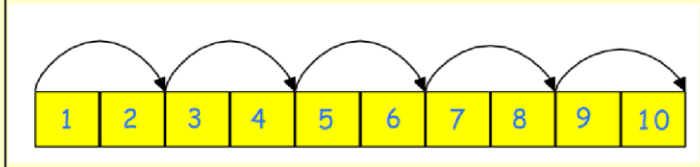
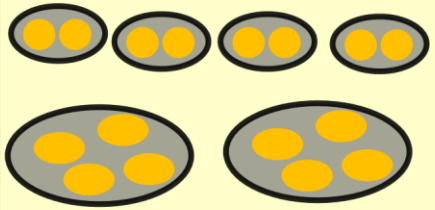
Crosslee Community Primary School

Calculation Policy

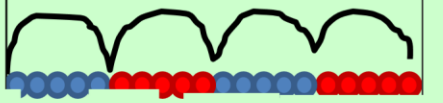
Division

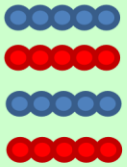
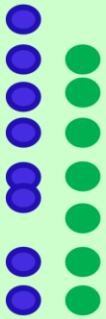
Division

<table>
<tr>
<td>Year 1

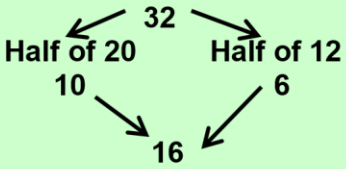
Solve 1 step problems involving x and ÷ using objects, pictures and arrays with teacher support</td>
<td></td>
<td colspan="2"> 
 
</td>
<td>There are eight oranges.
Can you share them equally?
  </td>
</tr>
<tr>
<td>Year 2

Calculate maths statements for x and ÷ within the times tables and write them using the correct sign

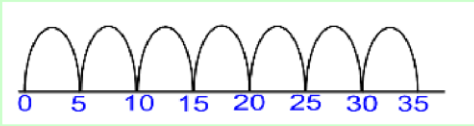
X ÷ =</td>
<td>Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</td>
<td>Counting
 

Relate division to counting and multiplication facts.
Count in 5s to see that there are 4 5s in 20.
 
How many groups of five are there in 20?</td>
<td> 
Recall and Derive Halves

Look at doubles of even numbers and seeing half of odd numbers as one left over or ½

Halving by partitioning
 
</td>
<td>Division by sharing

10 ÷ 5 =

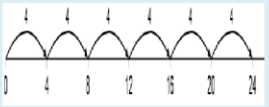
Division by grouping
35 ÷ 5 =
 
</td>
</tr>
</table>

Division

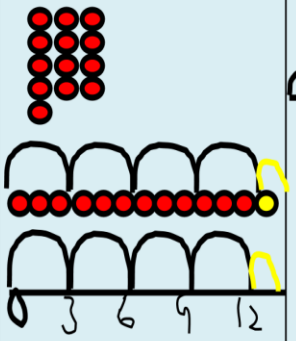
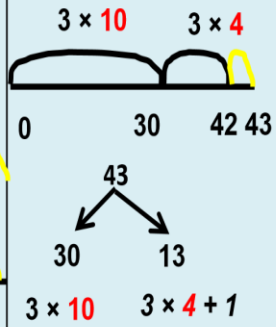
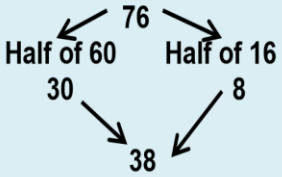
<table>
<tr>
<td>Year 3

Write and solve maths sums for x and ÷ using x tables they know including 2-digit ÷ 1 digit using metal and moving to written methods</td>
<td>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Use facts for numbers up to 10 times the divisor
Eg 28 ÷ 3
This is between

27 ÷ 3 = 9 and
30 ÷ 3 = 10
So 9 remainder 1</td>
<td>Counting
Relate division to counting and multiplication facts.
Count in 4s to see that there are 6 4s in 24
 

Arrays show 6 groups of 4 so
24 ÷ 4 = 6</td>
<td>Division as grouping

13 ÷ 3 = 4 r1
  </td>
<td>Division as grouping
43 ÷ 3
 
</td>
<td>Halving by partitioning
 
</td>
<td>Formal division

87 ÷ 6 =

14 r3
6 | 8 27</td>
</tr>
<tr>
<td>Year 4

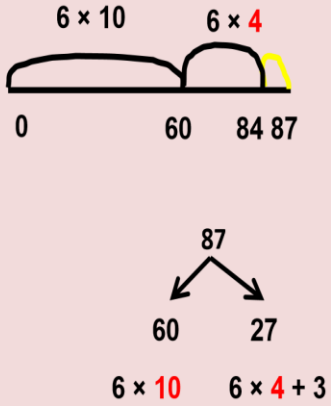
Use place value, known and derived facts to x and ÷ mentally inc; x by 0 and 1; ÷ by 1; x 3 number

÷ 2 and 3 digit numbers by a 1-digit number using formal written layout</td>
<td>Division facts for multiplication tables up to 12 × 12

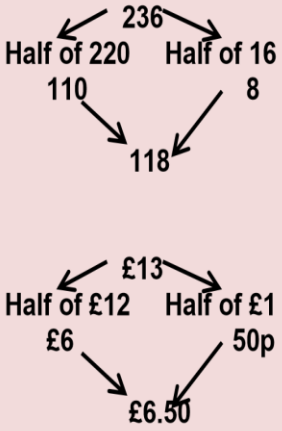
Use facts for numbers up to 10 times the divisor

Eg 75 ÷ 9
This is between

72 ÷ 9 = 8 and
81 ÷ 9 = 9
So 8 remainder 3</td>
<td>Division as grouping
Combine multiples of the divisor to support you

87 ÷ 6 =
 
</td>
<td colspan="2">Formal division

87 ÷ 6

14 r3
6 | 8 27</td>
<td>Halving by partitioning
 
</td>
<td></td>
</tr>
</table>

Division

<table>
<tr>
<td>Year 5
Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</td>
<td>Multiply and divide numbers mentally drawing upon known facts

Divide numbers by 10 and 100
<table>
<tr><th>H</th><th>T</th><th>O</th><th>1/10</th><th>1/100</th></tr>
<tr><td></td><td>2</td><td>7 ●</td><td></td><td></td></tr>
<tr><td></td><td></td><td>● 2</td><td>7</td><td></td></tr>
</table>
</td>
<td colspan="2">Division as grouping drawing on known facts

Use partitioning and known facts

196 ÷ 6 = 32r4
180 (6 x 30) 16 (6 × 2 + 4)

325 ÷ 3= 108r1
300 (3 × 100) 24/1 (3 × 8 + 1)</td>
<td></td>
<td>Formal (short) Division
638 ÷ 8

0 7 9 r 6
8 | 6 63 78

6725 ÷ 7

0 9 6 0 r5
7 | 6 67 42 5</td>
</tr>
<tr>
<td>Year 6

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</td>
<td>Use known facts

Know 378 is a multiple of 3 because 300, 60 and 18 are all multiples of 3

Know 385 is a multiple of 7 because 350 and 35 are multiples of 7</td>
<td>Short Division

638÷ 8

7 9r 6
8 | 6 63 78

6725 ÷ 7

0 9 6 0 r5
7 | 6 67 42 5</td>
<td>Remainders as decimals and fractions

493 ÷ 15

0 3 2 r 13/15
15 | 4 49 43

0 4 1 3 . 5
1 | 4 9 15 42 . 60</td>
<td>Formal written long division

242
15 | 3640
-30
64
-60
40
-30
10

242
15 | 3640
- 3000 15x200=3000
640
- 300 15x20=300
340
- 300 15x20=300
40
- 30 15x2-30
10</td>
<td>Use place value and division facts

1.32 ÷ 3 = 1/100 of 132 ÷ 3
132 ÷ 3 = 44
44 ÷ 100 = 0.44
So 1.32 ÷ 3 = 0.44

Use tests of divisibility
Multiple of 3, digits in the number add to 3, 6 or 9

Multiple of 4, tens and ones in the number are a multiple of 4

Multiple of 6, the number is even and digits in the number add to 3, 6 or 9

Multiple of 9, digits in the number add to 9</td>
</tr>
</table>